MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

The role of Life Cycle Assessment in the Building for Climate Change programme

Katie Symons

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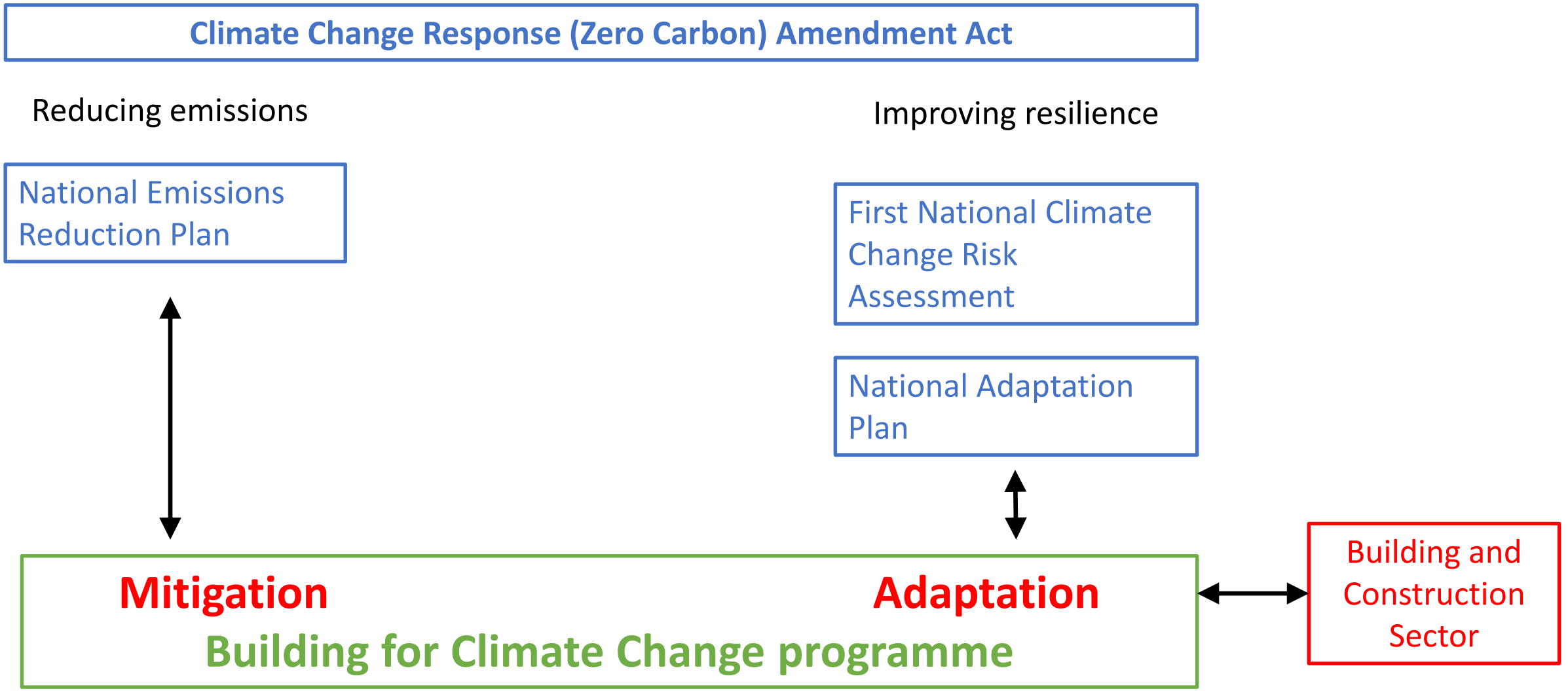
New Zealand Government

The problem

If New Zealand is to reach its goal of net Carbon Zero by 2050, the Building and Construction sector must play a major part in this, and changes must be made.

Whole of Government Climate Change programme



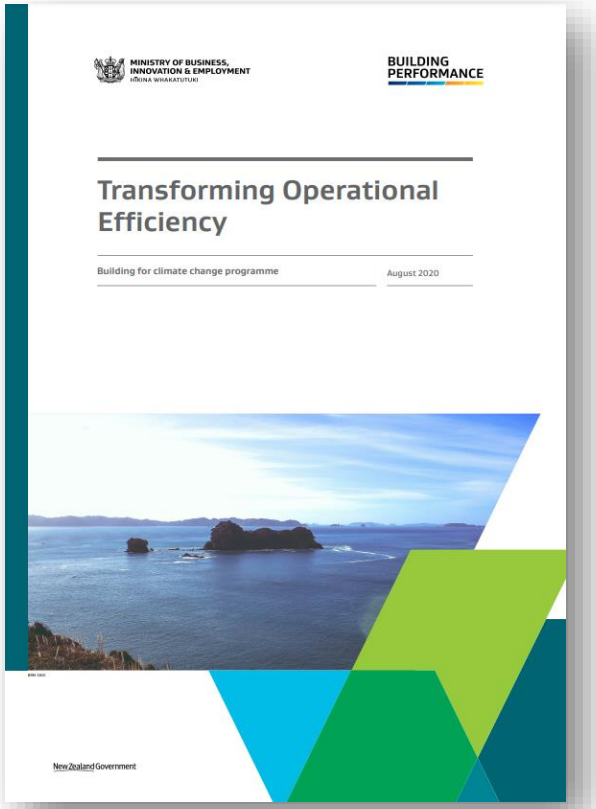
What else is happening

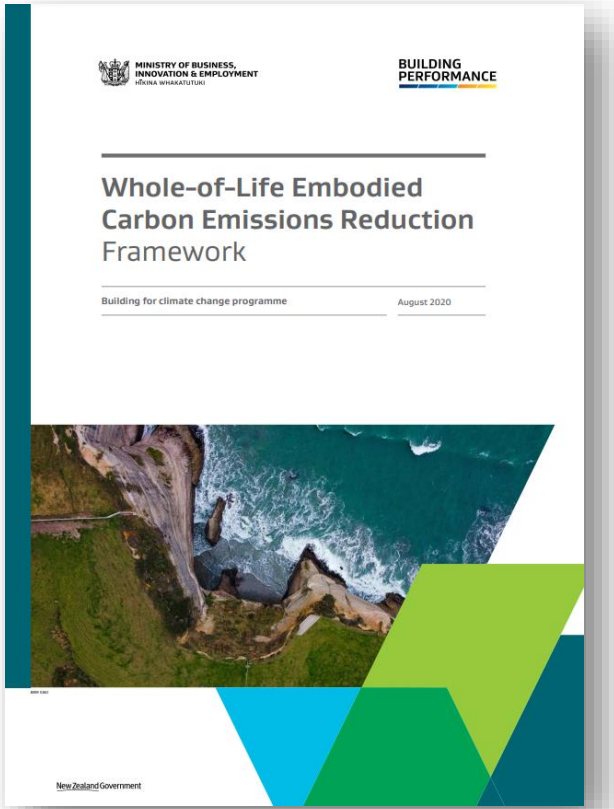
2021 will be a landmark year for climate change policy:

- Carbon Neutral Government Programme underway
- First emissions budgets being developed by the Climate Change Commission
- Final Emissions Reduction Plan published by the end of the year

Frameworks for change

Two **mitigation** frameworks published for consultation in 2020:





Framework 1: Transforming operational efficiency

Objectives

- Reduce operational emissions
- Reduce water use
- Improve people’s health and wellbeing

Framework 1: Transforming operational efficiency

Current State

- Only a specialist area
- Regulation not robust
- Lack of a system focus
- Slow-growing awareness

Future Vision

- Energy efficiency, water use, emissions are all core considerations when building
- New regulations, including emissions cap
- Buildings occupants are healthier and wellbeing has improved

Framework 1: Transforming operational efficiency

Our approach

- Mandatory Operational Emissions Cap setting out the total allowable annual emissions per square meter per annum for all new buildings.
- Mandatory Water Use Cap setting out the total allowable potable water use per square meter per annum for all new buildings.
- Defined Indoor Environmental Quality parameters for all new buildings to comply with.
- Caps tighten in a series of steps to final requirements in 2035

Framework 2: Reducing whole-of-life embodied carbon

Objectives

- Getting the most out of buildings
- Increase building material efficiency
- Reduce the carbon intensity of materials used

Framework 2: Reducing whole-of-life embodied carbon

Current State

- Immature understanding of embodied carbon in buildings
- No regulations or incentives to quantify or reduce
- Growing interest, multiple tools and methodologies available

Future Vision

- Good understanding of embodied carbon in buildings,
- Embodied emissions significantly lower than today
- Tools to account for and quantify embodied emissions are widely used

Framework 2: Reducing whole-of-life embodied carbon

Our approach

- Whole-of-life embodied carbon considerations will become mandatory for buildings in New Zealand
- Freedom of choice in identifying how to best reduce embodied carbon emissions
- Time to upskill during initial reporting stage, then caps introduced
- Government leading the way with public sector pilot projects demonstrating how to comply with requirements

First public consultation results (January 2021)

- Over 350 submissions
- 92% agree action is needed to reduce emissions from building sector
- 87% agree initiatives needed to reduce embodied carbon, 74% supported the proposed cap for new buildings
- 79% said there were significant barriers preventing businesses from reducing emissions
- Overall, gives a clear mandate to implement proposals in frameworks

Whole-of-Life Embodied Carbon: Calculation Methodology

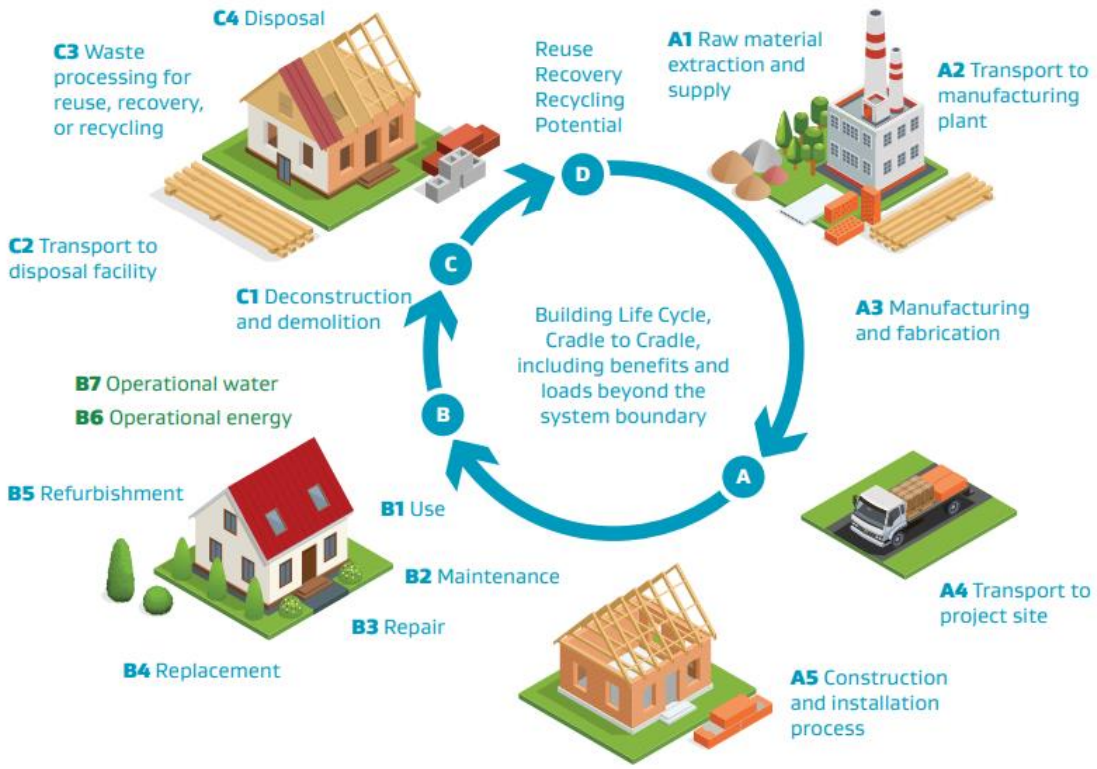
$kg\ CO_2\text{-}e$	=	m^2	x	$kg\ material/m^2$	x	$kg\ CO_2\text{-}e/kg$ material
Whole-of-life embodied carbon		New building efficiency		Material efficiency		Carbon intensity

For a building consent:

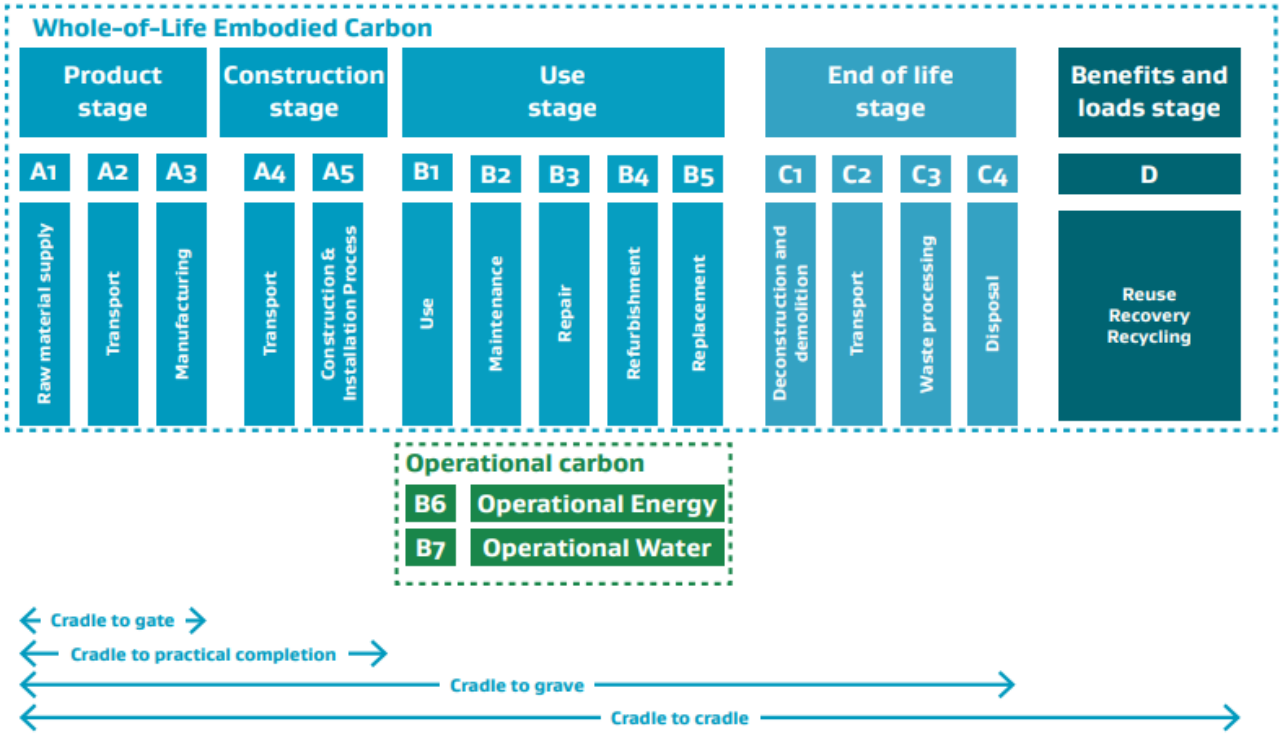
- Material quantity x emissions factor, summed for all high-impact materials

…..sounds simple!

Whole-of-Life Embodied Carbon: Introducing the Life Cycle Approach



“Cradle”???
“System boundaries”??
“GWP”???
“Modules”???
“End-of-Life scenarios”???



…..gets complicated!

Whole-of-Life Embodied Carbon: Developing the Life Cycle Approach

- Use of International Standards: there's still room for variation
- Circular economy: my material is recyclable, so will reduce emissions in the future
- Biogenic carbon: my material stores carbon (so offsets emissions)
- Data: I don't know where to find it, and can I trust it?

Whole-of-Life Embodied Carbon: Methodology scope areas (draft)

1	**Temporal boundaries**	What life cycle stages are included
2	**Spatial boundaries**	What building components are included
3	**Future uncertainty**	Assumptions on lifetimes, component replacements, end-of-life emissions
4	**Data sources**	Hierarchy of data, including default values
5	**Positive and negative impacts**	Separation of these, for clarity

Whole-of-Life Embodied Carbon: Methodology principles (draft)

Consistent	Transparent	Clear & Understandable	Outcome-focussed
Results are credible and can be trusted for decision makers	Uses best data and guidelines available at the time, but can be agile if things change	Results are informative and insightful, telling people what they need to know	Delivers emissions reductions by directing effort to areas with the biggest impact

Whole-of-Life Embodied Carbon: Support required!

- Translate life cycle terms into everyday language
- Increase “Carbon Literacy” across all the construction sector
- Avoid unintended consequences/perverse outcomes (or poor outcomes!)

- Respond to consultation on whole-of-life embodied carbon methodology

Thank you

More information is available at: MBIE.govt.nz/BfCC

Or email us: BfCC@MBIE.govt.nz